

## CHAPTER V: CONCLUSION AND RECOMMENDATIONS

This is the last chapter in this research and it includes the conclusion, recommendations and suggestion, limitation of this research and more guidance for future further studies in the same field.

### 5.1 Conclusion

This research analyzes and illustrate the reality of e-government and its administrative development in Yemen in addition to the benefits and challenges of e-government and cloud computing in Yemen. The use of ICT and infrastructure, problems of IT, security and management of technology in Yemen have been administrated.

The results of this research could be summarized in this conclusion as following:

1. e-government in Yemen still at the beginning of development and need many investments by government to grow up.
2. Administrative development in different departments of public sector have experienced the ICT and established good infrastructure of ICT. but e-government still use the traditional methods and there are many requirements to migrate to cloud computing
3. Cloud computing have been established in some public and private sectors but in very low quality and personal support.
4. There are many challenges facing the implementations of e-government and its development in Yemen. The main problems that face development of e-

government in Yemen is political stability, awareness of the importance of e-government and lately conflicts and wars.

5. design of e-government in Yemen by using cloud computing have been introduced.

The interviews showed that, there are a huge gap between the reality of e-governments and the usual infrastructure that are required to establish e-government that depend on cloud computing as a better choice. There are many initiatives by many researchers introduce the use of technology but there is also a lack of infrastructure and support for these services.

## **5.2 Recommendations**

This research investigated and analyzed the reality of e-government and its development in Yemen. There were many problems facing implementation of e-government. There are many suggestions by researcher during his researcher such following:

- Establishing a modern infrastructure of telecommunications and information and the development of high-speed Internet access and coverage for all governorates in Yemen.
- Dissemination of e-culture starting from teaching of computer from the elementary stage through all ages and cultural levels in society.
- Restructuring organizational structures and job design to meet changing and re-planning requirements for working human resources.

- Higher administrations have adopted the concepts of applying e-administrations.
- Review, reformulate and prepare regulations of ICT in the country.
- Develop the necessary strategies for the rehabilitation and training of human resources.
- Establishing legal and protective legislation for electronic application.
- Provision of the necessary funds and financial resources for effective implementation.
- Develop plans and programs of awareness and education to the public dealing with government departments.
- Develop alternative plans for electronic administrations for direct use in time of need.

### **5.3 Limitations**

This research identified the following limitations:

- ***Spatial boundaries:*** This research was limited to some government departments in the Ministry of Communications, post office and Public Telecommunications Corporation in Yemen.
- ***Time limits:*** This research was conducted in 2016-2017
- ***Study impediments:***
  1. The difficulties of communicating with the directors of ICT departments because of the weakness of the Internet and the political problems in Yemen.

2. The difficulty of distributing the questionnaire and follow up its compilation because the questionnaires were online.
3. Difficulties to obtain interviews online because of lack of infrastructure of ICT with the managers of departments and because of the weakness of the Internet.

#### **5.4 Further Studies**

- cloud computing is a new application and has many benefits.
- there are many researches discussed in depth cloud computing technically where still shortage in the social aspects.
- there is need for more researches in adoption of such technology in different aspects of life.
- this research helps to open the door for development of cloud computing and e government in Yemen.
- there are many challenges of implementation of cloud computing and e-government in Yemen and these need for more studies in the same field.

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## **APPENDIXES 1**

### **Interviews Questions:**

Source: Seyed Farid Mousavi Shoshtari, Cloud Computing Adoption in Developing Countries – A Tentative Framework Based on Experiences from Iran, Master's Thesis in Informatics),2013.

#### **1. Interview questions (of Communications and Information Technology, IT Department)**

1. How is the level of awareness of the government toward cloud computing and its potential benefits?
2. Is the current ICT infrastructure issues known to the government?
3. Name and explain about the current major known issues in the ICT infrastructure of the country?
4. What objectives of government in order to overcome these issues?
5. Has the government deployed cloud computing in any organisation or government agency?
6. What are the current ratified policies that are aimed to elevate cloud adoption in the country?
7. What steps have been taken toward paving the way of cloud computing adoption in the country?
8. Has the government conducted any research to investigate the possibilities of migrating to cloud?
9. What measures have been taken to address the issues?
10. What are the on-going ICT related projects in the country?
11. What incentives have been proposed by the government in order to encourage the public/private organizations to adopt cloud computing?

#### **2. Interview questions (Public Telecommunications Corporation)**

1. What is the nature of business in your Department?
2. How many staffs are employed in all the branches of your organizations?
3. Do you have a dedicated IT department?
4. What is the current trend of IT in your company? More precisely, what are the main technologies that are being used?
5. Explain about your understanding of cloud computing?
6. How can cloud computing improve the business and operation in organizations?
7. What are the top drivers of cloud computing initiatives at your organization?
8. What types of cloud computing are currently being used in your organisation?
9. Is cloud computing being discussed in meetings or knowledge sharing sessions in the company, especially with the IT department? If yes, how often?
10. How can cloud computing affect the current operation of the company?
11. Can you explain about the main issues that you are most worry about if the company is to adopt cloud computing?
12. What are the incentives offered by the government to encourage you to adopt cloud computing?

13. Have you ever been invited by any ministry or government agency to attend workshops or conferences about cloud computing?
14. Explain about your tendency of in migrating to cloud?
15. What are the steps that are already taken in order to achieve successful cloud adoption?

### **3. Interview Questions (*IT Department in Yemen Post Office*)**

1. How many staffs are currently working in the IT department?
  2. How do you assess your knowledge about cloud computing?
  3. How do gain and update your knowledge about cloud computing?
  4. How do you transfer this knowledge to the management team?
  5. What types of cloud computing are currently being used in the organization?
  6. How can cloud computing affect the operation of organization?
  7. What are the technological barriers on the way of completely shifting to cloud?
  8. How supportive is the management team to take initiatives toward cloud computing adoption in the company?
  9. Have you ever been invited to any workshop of conference about cloud computing?
- Interview Guideline (ICT Infrastructure Assessment)

## APPENDIXES2

Source: Saleh Mohammed Al-Qahtani , Application of eGovernment and its role in administrative development, Letter to obtain a master's degree in administrative sciences, 2010.

### QUESTIONNAIRE1

The first axis: the reality of the application of e-government in Yemen. Here are a set of statements which show the reality of the application of e-government "Please specify the availability of each of the following elements (available a large extent - Available - Available moderately - Available to a low degree - not available) from your point of view.

No.	Phrase	AS	A	AM	AFD	NA	Notes
1	Provide the necessary capabilities to implement electronic work						
2	Provide qualified human resources for the application of electronic work						
3	Provide technical capabilities for electronic work						
4	Connecting the directorates with their branches using the computer						
5	Availability of infrastructure for electronic work						
6	Possibility of inventory and communication between government departments electronically						
7	Provide a security system to protect the data and information of the beneficiary in all electronic transactions						
8	Provide a special section on technical support for electronic services						
9	Provide e-mail service for employees and telephone inquiry service electronically						
10	The possibility of submitting complaints, complaints and progress on vacant positions electronically						

## QUESTIONNAIRE2

The second axis: the fields of administrative development in Yemen. Here are a set of statements which show the reality of administrative development in Yemen, "Please determine the degree of availability of each of the following elements (Strongly Agree - Agree - Neutral - not agree - Strongly Disagree) from your point of view.

No	Phrase	SDA	DA	N	A	SA	Notes
1	Simplify and facilitate administrative procedures in a way that enables the use of electronic services						
2	Expanding participation in administrative decision-making						
3	Minimizing the impact of personal relations on the completion of administrative work						
4	Enhance confidence in electronic transactions rather than paper transactions						
5	Support and encourage electronic culture among employees						
6	Developing the abilities and skills of employees to use e-government						
7	Facilitate the process of communication between the general directorates and the administrative regions concerned						
8	Providing electronic services to beneficiaries wherever they may be						
9	Simplify and facilitate administrative procedures in a way that enables the use of electronic services						
10	Minimize time, effort and cost						

### QUESTIONNAIRE3

Fourth axis: The most important obstacles to e-government to achieve administrative development. Here are a set of statements which show the most important obstacles to e-government to achieve administrative development in Yemen, "Please determine the degree of availability of each of the following elements (Strongly Agree - Agree - Neutral - not agree - Strongly Disagree) from your point of view.

NO.	Phrase	SDA	DA	N	A	SA	Notes
1	Absence of strategic planning for transition to electronic work						
2	Lack of financial, human and technical resources to implement e-government programs						
3	Failure to support senior management of e-government policy						
4	Lack of awareness of the importance of electronic government and its role in administrative development						
5	Lack of awareness of the importance of e-government and its role in the administrative development						
6	Workers' resistance to change and shift towards e-government because it threatens their interests						
7	Lack of human resources specialized in e-government						
8	Lack of confidence in the security and protection of data and information of the beneficiary in all electronic transactions						
9	The ambiguity of the concept of e-government in some administrative leaders and employees						
10	The lack of material incentives necessary to encourage employees to implement electronic work programs, as well as scarcity of training courses, seminars and conferences in the field of e-government						